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ABSTRACT

This report presents the results of an external evaluation of a model bilingual program for nursery school through third grade students in the municipal schools of Clovis and Portales, New Mexico. The project is divided into three programs--nursery school, kindergarten, and grades 1-3--designed to reach children with limited English-speaking ability from low-income families. Bilingual and bicultural materials were used to promote development of affective, cognitive, and psychomotor skills. This evaluation, which focused on stduent achievement in language development, reading and math skills, utilized a pre- and post-test design. Among the major findings: (1) Nursery school students made significant gains in language development (English and Spanish) and school readiness and indicated a positive growth in self-concept and personal development; (2) Kindergarten students made significant gains in language development (English and Spanish), school readiness and basic skills; (3) For Grades 1-3, significant differences between control and treatment students were found only for second grade Spanish and first grade reading achievement. These differences were in favor of the treatment group. An appendix to the report describes the instruments used in the evaluation. (Author/BD)

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END-OF-YEAR EVALUATION REPORT
1976-77
SECOND-YEAR EVALUATION STUDY

A SCHOOL AND HOME-BASED BILINGUAL EDUCATION MODEL
(NURSERY SCHOOL-GRADE 3)

Funded by:

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B.E. Askins & Associates
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June, 1977

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EVALUATION TEAM MEMBERS

Dr. Billy E. Askins, Coordinator of Evaluation
Dr. Joe D. Cornett, Research Associate
Dr. Ralph Carter, Test Specialist
Mrs. Ginger Dickerson, Secretary/Administrative Assistant

FOREWORD

The following end-of-year evaluation report describes the effect of A School and Home-Based Bilingual Education Model during 1976-77. This evaluation study was conducted by an independent consultant and service organization with its direction primarily through various faculty members of the College of Education, Texas Tech University. This report is submitted in accordance with the approved Evaluation Proposal dated April 23, 1976 and the Educational Evaluation Agreement dated September, 1976.

The evaluation team recognizes and hereby expresses appreciation to the project director, coordinator, faculty, and staff of the program for their excellent cooperation during the evaluation process, especially during the periods of testing the young children.

The invaluable assistance of the various professional and paraprofessional personnel on the evaluation team is also acknowledged and appreciated.

Billy E. Askins

Billy E. Askins, Ed.D.
Evaluation Coordinator
June, 1977

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SECTION I

INTRODUCTION

This report describes an external evaluation study of the project "A School and Home-Based Bilingual Model" during the 1976-77 school year. This project is a cooperative effort among the Clovis Municipal Schools (Clovis, New Mexico), Portales Municipal Schools (Portales, New Mexico), and the U. S. Office of Education (ESEA, Title VII).

This evaluation study was conducted by B. E. Askins and Associates which is an independent consultant and service organization with its direction through various faculty members of the College of Education, Texas Tech University.

The focus of the external evaluation study during 1976-77 was mainly on the Instructional Component of the three programs of the project (Nursery School Program, Kindergarten Program, and the Grades 1-3 Program).

Purpose and Goal of Project

The purpose of this project was to develop for the two school districts, over a five-year period, a model bilingual program from nursery school (beginning at age 3) through grade six. The project will implement innovative and tested instructional bilingual-bicultural materials so as to better reach children with limited English speaking ability from low income families.

The major goal of this project is to provide an early childhood bilingual education intervention which will facilitate the learning of two languages (English and Spanish) simultaneously in an effort to effectively develop the childs' cognitive, affective, and psychomotor skills. To accomplish this goal, specific objectives were developed for each program/unit of the project.

Area Served and Locale of Project

The area served by this project was the total attendance area served by both of the cooperating school districts: Clovis Municipal Schools, New Mexico and Portales Municipal Schools, Portales, New Mexico.

Each of the three programs (Nursery School, Kindergarten, and Grades 1-3) operated at two different sites about twenty miles apart. The programs in Clovis were conducted at La Casita Elementary School and the programs in Portales were conducted at Lindsey Elementary School.

Both of the elementary schools are located in the section of town

where there is a hign concentration of target group children.

Target Group Children

As concerns the Nursery School Program, the target group children were 3- and 4-year-old children with limited English speaking ability at both Clovis and Portales (approximately 40 at each site). The Kindergarten Program served 5-year-old children with limited English speaking ability at both sites (approximately 40 at each site). The Grades 1-3 Program consisted of selected students in grades 1-3 (approximately 25 at each grade level at each site).

SECTION II

DESCRIPTION OF THE PROJECT

The project, "A School and Home-Based Bilingual Education Model", is a demonstration model for bilingual early childhood education for the nursery school level through the third grade level. The project will be expanded one grade level each year to the sixth grade. The project operates at two sites: La Casita Elementary School in Clovis and Lindsey Elementary School in Portales, New Mexico.

Components and Programs

The project is organized in terms of four components and three programs. The components are: Instructional; Parental Involvement; Staff Development; and Materials Development. The programs are the: Nursery School Program; Kindergarten Program; and the Grades 1-3 Program. Each program operates at the two sites - Clovis and Portales.

The major purpose of the evaluation study during 1976-77 was to measure the impact of the project as concerns student achievement; therefore, this study focused primarily on the Instructional Component of the project. Performance objectives for the Instructional Component were developed by program and are presented in the following paragraphs.

Program Objectives

The major performance objectives of the three programs are as follows:

Nursery School Program

The Nursery School Program has a unique advantage and opportunity in that it is viewed as an out-growth or as a satellite of an existing successful early childhood program. This parent program is an early educational intervention program referred to as the Responsive Environment Early Education Program - REEEP (formerly the Responsive Environment Program for Spanish American Children - REPSAC)*.

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*REEEP is funded by the New Mexico State Department of Education (ESEA, Title VII), and the outreach activities of the program are funded by the Handicapped Children's Early Education Program, Bureau of Education for the Handicapped, U. S. Office of Education.

This program, also located in Clovis, is designed to serve as an early educational intervention for 3-, 4-, and 5-year-old "high risk" children. (See Bibliography 3, 4, 5, 6, 7, 8, 9, 14, 16, 17, and 19). Such children are considered "high risk" as a result of their low birth weight (less than 5 ½ pounds) and considered disadvantaged (low income of family plus other factors which constitute this condition). With the exception of the criteria used to select students to enter each program, the operation of the two programs are identical. Thus, REEEP provides a base for this project in terms of curriculum development, staff development, and evaluation.

The objectives for the Nursery School Program were as follows:

At the end of the school year, the students will:

1. Indicate a significant gain in language development in English. Evidence of achievement will be determined from gain scores of the Peabody Picture Vocabulary Test.

2. Indicate a significant gain in language development in Spanish. Evidence of achievement will be determined from gain scores of the Test for Auditory Comprehension of Language - Spanish.

3. Indicate a significant gain in school readiness in such areas to include: listening ability; visual acuity; and recognition of similarities, differences, and numerical analogies. Evidence of achievement will be determined from gain scores of the Readiness Test for Disadvantaged Preschool Children.

4. Exhibit a positive self-concept and favorable emotional development. Evidence of such behavior will be determined from ratings from the Developmental Profiles which involve periodic teacher evaluations in such areas of the affective domain as: awareness of self; self-confidence; interpersonal comprehension; sensitivity to others; effectiveness; and tolerance. Evidence of growth/development will be determined from the individual profile sheets plotted in terms of direction and rate of growth/development.

Kindergarten Program

The objectives for the Kindergarten Program were as follows:

At the end of the school year, the students will:

1. Indicate a significant gain in language development in English. Evidence of achievement will be determined from gain scores of the Peabody Picture Vocabulary Test.

2. Indicate a significant gain in language development in Spanish. Evidence of achievement will be determined from gain scores of the Test for Auditory Comprehension of Language - Spanish.

3. Indicate a significant gain in school readiness in such areas to include: listening ability; visual acuity; and recognition of similarities, differences, and numerical analogies. Evidence of achievement will be determined from gain scores of the Readiness Test for Disadvantaged Preschool Children.

4. Indicate a significant gain in general basic skills. Evidence of achievement will be determined from gain scores of the Boehm Tests of Basic Concepts.

Grades 1-3 Program

The objectives for the Grades 1-3 Program were as follows:

At the end of the school year, the students will:

1. Indicate a significant gain in language development in English. Evidence of achievement will be determined from gain scores of the Peabody Picture Vocabulary Test.

2. Indicate a significant gain in language development in Spanish. Evidence of achievement will be determined from gain scores of the Test for Auditory Comprehension of Language - Spanish.

3. Indicate a significant gain in developmental skills in reading. Evidence of achievement will be determined from gain scores of the Metropolitan Achievement Test (reading sub-test).

4. Indicate a significant gain in developmental skills in math. Evidence of achievement will be determined from gain scores of the Metropolitan Achievement Test (math sub-test).

SECTION III

EVALUATION

In addition to the on-going internal program evaluation procedures, an external study was conducted by an outside independent evaluator. During the 1976-77 school year, the external evaluation focused on the instructional component of the three programs: Nursery School, Kindergarten, and the Grades 1-3 Program.

The External Evaluator

The external program evaluation study was conducted by B. E. Askins & Associates, Lubbock, Texas. This is an independent consultant and service organization with its direction primarily through various faculty members of the College of Education, Texas Tech University. Members of the evaluation team consisted of professional people with various specializations including: early childhood and elementary education; bilingual education; and research and evaluation. Names of the evaluation team members are listed on the cover of this report.

Purpose of the External Evaluation Study

The major purpose of this evaluation study was to collect and provide information necessary for decision-making relative to student and program progress. Such information was provided to the project director, local education agencies (Clovis and Portales), and to the funding agency.

Major elements of this external evaluation consisted of:

1. Providing a variety of professional personnel appropriate to the evaluation of the project. This included personnel to administer the standardized tests for the Nursery School Program, scoring tests (K-G3), conduct in-service training to teachers who are involved in administering various instruments (K-G3), site-visits, analysis, and reporting writing.

2. Providing the project director with baseline data which could be used in program planning and operation. These data were mainly the results from the pretesting phase. The pretests, as well as the posttests, scores for each student were provided to the project director.

3. Preparing reports

   a. An interim report which was submitted to the project director on November 30, 1976.

   b. This Final Evaluation Report.

4. Disseminating evaluation reports and other information pertaining to the operation of the project.

Evaluation Design

The purpose of this evaluation design was to measure the impact of the project as concerns student achievement (primarily language development and academic readiness/skills) in the three programs (Nursery School, Kindergarten, and Grades 1-3). This design, based upon the major program objectives, provided for evaluating separately each of the three programs of the project.

The evaluation of each of these programs is described in the following paragraphs in terms of: Evaluation Model; Objectives and Test Instruments; Procedures and Time-Schedule for Collecting Data; and Analytical Procedures.

Nursery School Program

This program was evaluated using a one group pretest-posttest design and a special regression model. The use of this type model was necessary because of the non-availability of a comparison or control group at the two sites.

The special regression model determines the relationship of selected program and personal variables (such as age, year in program, and teacher ratings) on the progress of participants. This model provides an estimate concerning how the students would have performed if they had not received the treatment. This model can be depicted as:

$$Y^1 = X_1 + X_2 \text{---} X_n$$

Where:

Y^1 = measure of program objectives

$X_1 \text{---} n$ = program and personal variables

This program was designed for 3- and 4-year-old children and used bilingual instructional activities. The program operated at both Clovis and Portales and served approximately 40 students at each site.

Objectives and Test Instruments. A summary description of the program objectives and list of instruments selected to measure the objectives are as follows:

Objectives	Instruments
Language development in English	Peabody Picture Vocabulary Test (Dunn)

Language development in Spanish	Test for Auditory Comprehension of Language-Spanish (Carrow)
School readiness	Readiness Test for Disadvantaged Preschool Children (Walker)
Self concept and emotional development	Developmental Profiles (Bessel and Palomares)

A description of the tests is included in Appendix A.

Procedures and Time-Schedule for Collecting Data. The participants were tested and after the treatment (bilingual instructional activities) and statistical significance was determined on the difference. (Exception is the Developmental Profiles). Data to evaluate the self concept was collected with the use of the Developmental Profiles. This instrument was completed for each student three times during the year by the classroom teachers. The dates for administering the pretests were September 7-10, 1976, and the posttest were administered May 10-13, 1977. The Developmental Profiles were completed during September, February, and May. With exception of the Developmental Profiles, the pre and posttest were administered and scored by members of the evaluation team. The evaluator was responsible for procurement of all test materials used in evaluating the Nursery School program.

Analytical Procedures. Program impact was determined by a comparison of pre and posttest performance and the relationship between program and personal variables and posttest performance. This provided an estimate concerning how the students would have performed if they had not received the treatment. Means, standard deviation, and t values were reported. Also, a correlation matrix including correlations, intercorrelations, and multiple R's was computed.

Kindergarten Program

This program was evaluated using a special regression model with a one group pretest-posttest design. The use of this type of model was necessary because of the non-availability of a comparison group.

The special regressic model determines the relationship of selected program and personal variables on the progress of the participants. The model provides an estimate concerning how the students would have performed if they had not received the treatment. The model can be depicted as:

$$Y^1 = X_1 + X_2 \text{---} X_n$$

Where:

Y^1 = measure of program objective
X_1---n = program and personal variables

The program is designed for 5-year-old children and used bilingual instructional activities. The program operated at Clovis and Portales and serves approximately 40 students at each site.

Objectives and Test Instruments. A summary description of the program objectives and list of instruments selected to measure the objectives are as follows:

Objectives	Instruments
Language development in English	Peabody Picture Vocabulary Test (Dunn)
Language development in Spanish	Test for Auditory Comprehension of Language-Spanish (Carrow)
School Readiness	Readiness Test for Disadvantaged Preschool Children (Walker)
Basic Skills	Boehm Test (Boehm)

A description of the tests is included in Appendix A.

Procedures and Time-Schedule for Collecting Data. The participants were tested before and after the treatment (bilingual instructional activities) and statistical significance was determined on the difference. A special regression model was employed to determine the relationship of selected program and personal variables on the progress of the participants. This model can be depicted as:

$$Y^1 = X_1 + X_2 \text{---} X_n$$

Where:

Y^1 = measure of program objective
X_1---^{n} = program and personal variables

The dependent variables in this model are measures of the program objective (posttest) and the independent variables are selected program and personal variables. The pretests were administered in September, 1976 and posttest were administered in May, 1977. The pre and posttests were administered by designated teachers of the Clovis and Portales school districts. An in-service training session on the administering of these tests was conducted by the evaluator, on August 27, 1976. The pre and posttests were scored by members of the evaluation team. Procurement of all test instruments and answer forms was the responsibility of the project director.

Analytical Procedure. Program impact was determined by a comparison of pre and posttest performance and the relationship between program and personal variables and posttest performance. This included an estimate concerning how the student would have performed if they had not received the treatment. Means, standard deviations, and t values were reported. Also, a matrix including correlations, intercorrelations, and multiple R's was computed.

Grades 1-3 Program

This program was evaluated using a two group (treatment and control) pretest-posttest covariance model. The treatment group was the students taught with the bilingual approach. The comparison or control group will be students not receiving the bilingual approach and were selected on the basis of compatability with student composition of the treatment group. This model can be depicted as:

Treatment Group = T_1 X T_2

Comparison Group = T_1 T_2

Where: T_1 = pretest
T_2 = posttest
X = bilingual instructional activities

The two groups (by each grade level) were equated using the statistical technique of analysis of covariance and the covariates were the pretest scores.

This program consisted of employing the bilingual approach to teaching selected students assigned to particular sections in grades 1-3 at both Clovis and Portales. The number of participants in this program were approximately 25 at each grade level (1-3) at each of the two sites (Clovis and Portales)

Objectives and Test Instruments. A summary description of the program objectives and list of instruments selected to measure the objectives are as follows:

Objectives	Instrument
Language development in English	Peabody Picture Vocabulary Test (Dunn)
Language development in Spanish	Test for Auditory Comprehension of Language-Spanish (Carrow)
Developmental skills in reading	Metropolitan Achievement Test (reading sub-test)
Developmental skills in math	Metropolitan Achievement Test (math sub-test)

A description of the tests included in Appendix A.

Procedures and Time-Schedule for Collecting Data. Pretests were administered to students both in the treatment group and comparison group during September, 1976, and the posttests were administered to the same students in May, 1977. The pre and posttest were administered by designated

teachers of the Clovis and Portales school districts. An in-service training session of these tests were conducted by the evaluator on August 27, 1976. Scoring of all pre and posttest was performed by the evaluation team. Procurement of all test instruments and answer forms was the responsibility of the project director.

Analytical Procedure. Program impact was determined by a comparison between the treatment group and the comparison group on the measured variables controlling for pretest performance. Means, standard deviation, and summary analysis of covariance table was presented.

SECTION IV

EVALUATION DATA OF THE INSTRUCTIONAL COMPONENT

Summary of the Evaluation Design

The external evaluation was designed to measure the impact of the project as concerns student achievement (primarily language development and academic readiness/skills) in the three programs (Nursery School, Kindergarten, and Grades 1-3). This design, based upon the major program objectives, provided for evaluating separately each of the three programs. The evaluation design for the Nursery School and the Kindergarten Programs consisted of a pre and posttest one-group design plus a regression analysis of selected personal variables and posttest performance. The evaluation design for the Grades 1-3 Program was a two-group analysis of covariance design using pretest performance as the covariate.

The Nursery School Program

Data to evaluate this program were collected according to the major program objectives using standardized instruments for measurement. A summary of the objectives/abilities and instruments used are listed in Section III.

Number of Students Tested

Clovis Site. There were 41 students pretested (100%), and 35 students were posttested (98%). There were 32 students who were available for both pre and posttesting.

Portales Site. There were 39 students pretested (93%), and 31 students were posttested (94%). There were 30 students who were available for both pre and posttesting.

Findings

The analysis of data for the instructional component of this program is presented in terms of the program objective.

Language Development in English. Data pertaining to this objective are presented in Table I. As indicated in this table, total students participating in this program made a significant gain in language development in English. Data are also presented

in Tables II, III, and IV, and V relating to performance by site and age. As reflected in Table III, students at the Portales site did not make a significant gain in language development in English.

Language Development in Spanish. As indicated in Table I, total students participating in this program made a significant gain in language development in Spanish. Data are also presented in Tables II, III, IV, and V relating to performance by site and age.

School Readiness. As indicated in Table I, total students participating in this program made a significant gain in school readiness. When analyzed by site, students at the Clovis site failed to make a significant gain in this area. Data by site and age are presented in Tables II, III, IV, and V.

Self Concept and Personal Development. As indicated in Figure 1, students participating in this program indicated positive growth in self concept and personal development.

TABLE I

PRE AND POSTTEST PERFORMANCE OF ALL STUDENTS PARTICIPATING IN THE NURSERY SCHOOL PROGRAM

TEST	N	MEANS	MEAN GAIN	s	t
PPVT (ENGLISH)	62	PRE 19.33 POST 38.90	19.57	15.80 8.09	3.91**
TACL (SPANISH)	62	PRE 23.04 POST 55.35	32.31	17.81 21.26	7.63*
RTDC (READINESS)	62	PRE 15.16 POST 27.03	11.87	11.14 9.63	2.16***

* $p < .001$
** $p < .01$
*** $p < .05$

TABLE II

PRE AND POSTTEST PERFORMANCE OF
STUDENTS IN NURSERY SCHOOL PROGRAM (CLOVIS SITE)

TEST	N	MEANS	MEAN GAIN	s	t
PPVT (ENGLISH)	32	PRE 18.59 POST 39.76	21.17	15.82 8.09	3.19**
TACL (SPANISH	32	PRE 19.56 POST 53.22	33.66	17.87 26.82	4.68**
RTDC (READINESS)	32	PRE 17.63 POST 27.04	9.41	12.53 10.11	1.03 N.S.

** p< .01

TABLE III

PRE AND POSTTEST PERFORMANCE OF
STUDENTS IN NURSERY SCHOOL PROGRAM (PORTALES SITE)

TEST	N	MEANS	GAIN	s	t
PPVT (ENGLISH)	30	PRE 20.97 POST 38.04	17.97	17.50 10.47	1.01 N.S.
TACL (SPANISH)	30	PRE 26.52 POST 57.48	30.96	17.81 21.86	4.13**
RTDC (READINESS)	30	PRE 12.63 POST 24.73	12.10	12.69 11.15	2.46*

* p<.001
** p<.01

TABLE IV

AGE AND TEST PERFORMANCE OF STUDENTS
IN NURSERY SCHOOL PROGRAM (PORTALES SITE)

TEST	AGE	MEAN
PPVT (ENGLISH)	4	20.89
	5	17.25
TACL (SPANISH)	4	27.33
	5	42.50
RTDC (READINESS)	4	13.73
	5	4.33

TABLE V

AGE AND TEST PERFORMANCE OF STUDENTS
IN NURSERY SCHOOL PROGRAM (CLOVIS SITE)

TEST	AGE	MEAN
PPVT (ENGLISH)	4	16.43
	5	15.41
TACL (SPANISH)	4	27.83
	5	19.41
RTDC (READINESS)	4	13.01
	5	4.36

Developmental Profile

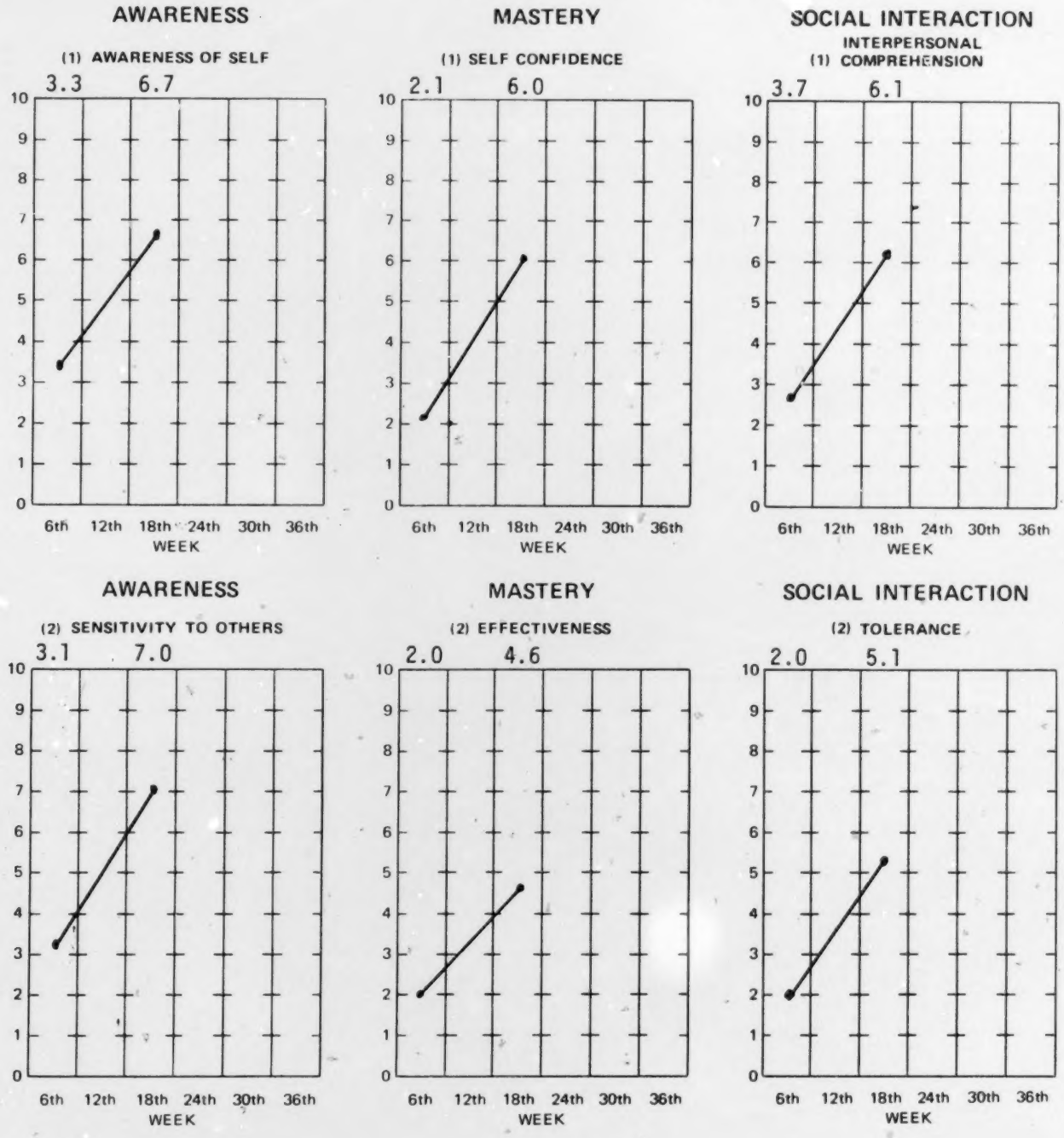

FIGURE 1 - GRAPHIC SUMMARY OF PERSONAL DEVELOPMENT

The Kindergarten Program

Data to evaluate this program were collected according to the major program objectives using standardized instruments for measurement. A summary of the objectives/abilities and instruments used are listed in Section III.

Number of Students Tested

There were 65 students pretested (98%) and 51 students posttested (95%) at both sites. There were 43 students available for both pre and posttesting.

Analysis

Data for the Kindergarten Program were collected from two procedures of the evaluation design of this program. First, a pre and posttest analysis was conducted on three measures: Peabody Picture Vocabulary Test - English (PPVT); Test for Auditory Comprehension of Language - Spanish (TACL); the Readiness Trest for Disadvantaged Preschool Children (RTDC); and the Boehm Test. Second, a multiple regression analysis was conducted with posttest scores of each measure dependent variables and pretest scores and selected personal variables as independent variables

Table VI presents the results of the pre and posttest analysis.

TABLE VI

PERFORMANCE OF STUDENTS IN THE
BILINGUAL KINDERGARTEN PROGRAM (N=43)

TEST	MEANS		GAIN	s	t
PPVT (ENGLISH)	PRE	43.28	7.55	12.02	5.50*
	POST	50.83		8.79	
TACL (SPANISH)	PRE	52.79	7.65	22.87	3.48*
	POST	60.44		25.75	
RTDC (READINESS)	PRE	33.95	3.31	7.70	3.62*
	POST	37.26		6.39	
BOEHM	PRE	31.14	8.06	10.41	3.64*
	POST	39.20		7.66	

* $p < .001$

As noted in Table VI, a significant gain was found for each of the four measures of the students.

Tables VII and VIII present the results of the regression analysis. Pretest performance, sex, family income, and family size were regressed on each posttest in an effort to determine which factor, or combination of factors, tended to explain the highest percentage of variance on the posttest.

TABLE VII

CORRELATIONS BETWEEN POSTTEST PERFORMANCE AND SELECTED VARIABLE OF STUDENTS IN THE KINDERGARTEN PROGRAM

POST TEST	PRE TEST	SEX	FAMILY INCOME	FAMILY SIZE	R	R^2
RTDC	.29	.09	-.28	-.08	.40	.16
PPVT	.31	.17	.16	-.10	.46	.21
TACL	.36	.04	.27	-.14	.50	.25

TABLE VIII

INTER-CORRELATIONS BETWEEN PRETEST PERFORMANCE AND SELECTED VARIABLE OF STUDENTS IN THE KINDERGARTEN PROGRAM

	PRE TEST	SEX	FAMILY INCOME	FAMILY SIZE
PRE TEST		.05	-.03	-.02
SEX			-.20	.52
FAMILY INCOME				.15
FAMILY SIZE				

The data collected as depicted in Tables VII and VIII reflect little in terms of variables which can be used to explain much of the variance. For the RTDC, 16% of the variance is explained by pretest, sex, family income, and family size; the PPVT 21%; and the TACL 25%.

Findings

Students in the Bilingual Kindergarten Program made significant gains in language development in English, language development in Spanish, school readiness, and basic skills.

The regression analysis failed to yield any substantial predictors of performance from the independent variables used in the analysis.

The Grades 1-3 Program

Data to evaluate this program were collected according to the major program objectives using standardized instruments for measurement. A summary of the objectives/abilities and instruments used are listed in Section III.

Number of Students Tested

For G1 at both sites, there were 92 students pretested and 68 students posttested. A total of 64 students were available for both pre and posttesting.

For G2 at both sites, there were 82 students pretested and 67 posttested. A total of 62 students were available for both pre and posttesting.

For G3 at both sites, there were 71 students pretested and 65 posttested. A total of 60 students were available for both pre and posttesting.

Analysis

For the G1-3 Program, the evaluation design was a two group (experimental and control) pretest - posttest covariate design. Measures were taken on language development in English (PPVT), language development in Spanish (TACL), developmental skills in reading (MAT-reading), and developmental skills in math (MAT-math). Table IX presents the means and standard deviation for each group.

Findings

From the analysis of the evaluation data of the G1-3 Program, the data yielded the following:

1. When controlling for pretest performance, a significant difference between the experimental (bilingual) and control groups was found in the area of language development in Spanish at the second grade level and developmental skills in reading at the first grade level. The differences between all other comparisons were found to be not significant. The results of the covariance is presented in Table X.

2. Pre and posttest means and mean gains for each grade level and each measure are presented in Table IX. It can be noted from these data that the bilingual group exceeded the control group on posttest performance in grades 1, 2, and 3 in language development in Spanish; in grades 2 and 3 in language development in English, in grade 3 in reading, and in grade 3 in math.

TABLE IX

COMPARISON OF MEAN GAIN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS (G1-3) IN AREAS OF SPANISH, ENGLISH, READING, AND MATH

VARIABLE	GRADE	GROUP	MEANS	MEAN GAIN
SPANISH (TACL)	1	E	PRE 61.32 POST 69.56	8.24
		C	PRE 53.25 POST 62.91	9.66
	2	E	PRE 65.24 POST 79.59	14.35
		C	PRE 66.14 POST 71.42	5.28
	3	E	PRE 76.69 POST 85.27	8.58
		C	PRE 62.00 POST 64.89	2.89
ENGLISH (PPVT)	1	E	PRE 51.90 POST 52.62	.72
		C	PRE 47.26 POST 54.58	7.22
	2	E	PRE 55.18 POST 59.08	3.90
		C	PRE 55.64 POST 55.67	.03
	3	E	PRE 59.50 POST 65.28	5.78
		C	PRE 60.35 POST 65.06	4.71
READING (MAT)	1	E	PRE 11.40 POST 19.03	7.63
		C	PRE 10.20 POST 23.38	13.18

TABLE IX (continued)

COMPARISON OF MEAN GAIN SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS (G1-3) IN AREAS OF SPANISH, ENGLISH, READING, AND MATH

VARIABLE	GRADE	GROUP	MEANS	MEAN GAIN
	2	E	PRE 16.32 POST 47.14	30.82
		C	PRE 15.70 POST 38.41	22.71
	3	E	PRE 34.45 POST 47.18	12.73
		C	PRE 30.77 POST 46.33	15.56
MATH (MAT)	1	E	PRE 11.91 POST 34.44	22.53
		C	PRE 15.20 POST 36.82	21.62
	2	E	PRE 25.05 POST 50.30	25.25
		C	PRE 26.17 POST 53.81	27.64
	3	E	PRE 41.09 POST 57.90	16.81
		C	PRE 41.27 POST 56.40	15.13

TABLE X

SUMMARY OF ANALYSIS OF COVARIANCE COMPARING EXPERIMENTAL AND CONTROL GROUPS (G1-3) FOR PRETEST PERFORMANCE

VARIABLE	GRADE LEVEL	F	P
SPANISH	1	.65	NS
	2	10.43	.001
	3	1.97	NS
ENGLISH	1	.38	NS
	2	.45	NS
	3	3.33	NS
READING	1	10.36	.01
	2	2.66	NS
	3	.95	NS
MATH	1	.52	NS
	2	3.59	NS
	3	.60	NS

Summary of Findings For All Three Programs

A summary of findings for all of the three programs are as follows:

1. Participants in the Nursery School Program made significant gains in language development in English, language development in Spanish, school readiness, and progressed positively in self-concept and personal development.

2. When analyzed by site and by age, participants in the Nursery School Program gained equally well on all measures except school readiness. Participants at the Clovis site failed to show a significant gain.

3. Participants in the Kindergarten Program made significant gains in language development in English, language development in Spanish, school readiness, and basic skills.

4. The regression analysis conducted on the Kindergarten Program failed to identify any variables which substantially contributed to posttest performance (see Tables VII and VIII).

5. When the experimental (bilingual) and control participants were compared, no significant differences were found except for second grade Spanish and first grade reading. Differences in both cases were in favor of the bilingual group.

SECTION V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The project, A School and Home-Based Bilingual Education Model (Nursery School - Grade 3), is a demonstration model for bilingual early childhood education. The project will be expanded one grade level each year to the sixth grade. The project is a cooperative effort among the Clovis Municipal Schools, Portales Municipal Schools, and the U. S. Office of Education.

The project is organized in terms of four components (Instructional, Parental Involvement, Staff Development, and Materials Development) and three programs (Nursery School, Kindergarten, and Grades 1-3). Each program operates in an elementary school at both the Clovis and Portales sites.

The major purpose of the external evaluation study during 1976-77 was to measure the impact of the project as concerns student achievement (primarily language development and academic reading/skills); therefore, the external evaluation focused on the Instructional Component of the three programs. The evaluation design, based upon the program objectives, provided for evaluating separately each of the three programs.

The evaluation design for the Nursery School and Kindergarten Programs consisted of a pre and posttest one group design and a special regression model. The evaluation design for the Grades 1-3 Program was a two group (treatment and control) pretest-posttest covariance model.

Findings

A summary of the findings of this study, by program and objective, are presented in the following paragraphs.

Nursery School Program

1. As a group, students made a significant gain in language development in English (MG = 19.57, $p < .01$). When analyzed by site, the gain made by students at the Portales site was not significant (MG = 17.97).

2. Students made a significant gain in language development in Spanish (MG = 32.31, $p < .001$).

3. As a group, students made a significant gain in school readiness (MG = 11.98, $p < .05$). When analyzed by site, the gain

made by the students at the Clovis site was not significant (MG = 9.47).

4. Students indicated a positive growth in self-concept and personal development.

Kindergarten Program

1. Students made a significant gain in language development English (MG = 7.55, $p < .001$).

2. Students made a significant gain in language development Spanish (MG = 7.65, $p < .001$).

3. Students made a significant gain in school readiness (MG = 3.31, $p < .001$).

4. Students made a significant gain in general basic skills (MG = 8.06, $p < .001$).

5. As concerns the regression analysis, pretest performance, sex, family income, and family size were regressed on each posttest score in an effort to determine which factor, or combination of factors, tended to explain the highest percentage of variance on the posttest. Very little evidence in terms of variables was found which could be used to explain much of the variance. For the Readiness Test, 16% of the variance was explained by pretest, sex, family income, and family size; the English Test 21%; and the Spanish Test 25%. Thus, the regression analysis failed to yield any substantial predictors of performance from the independent variables used in the analysis.

Grades 1-3 Program

1. The comparison between the experimental (bilingual) and control groups (in terms of language development in English and Spanish and development skills in reading and math) indicated no significant differences between the two groups except for second grade Spanish and first grade reading. Differences in both cases were in favor of the treatment (bilingual) group.

Conclusions

Based upon the findings of this study, the major conclusions were:

1. All of the objectives of the Instructional Component of the three programs (Nursery School, Kindergarten, and Grades 1-3) were achieved.

2. In the Grades 1-3 program where the experimental group (bilingual) was compared with the Control group, the only significant differences found

between the two groups was at the second grade level in the area of language development in Spanish and at the first grade level in developmental skills in reading. Differences in both cases were in favor of the treatment (bilingual) group.

3. The program is in an active and positive process of accomplishing the long range major goals.

4. In short, the project has the organization curriculum, materials, and a dedicated faculty/staff to provide the needed educational experiences for the target children and to serve as a model program; therefore, it was concluded that the Instructional Component of the project functioned as planned in accordance with the approved proposal during the 1976-77 school year.

Recommendations

Based upon the findings and conclusions of this study, the following suggestions or recommendations were made:

1. That the Nursery School Program of this project continue the replication and the relationship with the Responsive Environment Early Education Program (REEEP). This joint cooperation/operation of the two programs seems to be feasible, both operationally and economically.

2. That the external evaluation study be expanded to include all components of the project.

3. That the evaluator and administration spend more time and effort in the training of teachers in administering of tests in the programs where the tests are administered solely by the classroom teachers.

4. That the project continue to develop and serve as a bilingual and early childhood intervention and model program.

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APPENDIX A

DESCRIPTION OF INSTRUMENTS

A brief non-technical description of each of the test instruments is listed in the following paragraphs. Personnel interested in more detail concerning the test are invited to consult technical data provided by the publishers of the test or refer to the Mental Measurements Yearbook, Buros, editor.

Language Development

English

The Peabody Picture Vocabulary Test (Dunn) is designed to provide an estimate of a subject's "verbal intelligence" through measuring his hearing vocabulary. The test also has wide utility as a clinical tool. Besides being effective with average subjects, it has special value with certain other groups. Since subjects are not required to read and the responses can be non-oral, the test is especially fair to non-readers and remedial reading cases. With the drawings free of fine detail and figure-ground problems, the test is apparently appropriate for at least some perceptually impaired persons. According to the Test Manual, the scale is appropriate for subjects 2½ - 18 years who are able to hear words, see the drawings, and has the facility to indicate "yes" and "no" in a manner which communicates.

This standardized test is published by American Guidance Services, Inc., Circle Pines, Minnesota.

Spanish

The Test for Auditory Comprehension of Language (Carrow) measures the child's understanding of the Spanish language structure. The test is composed of 101 plates of pictorial referents. The child responds to each of the examiner's oral stimuli by pointing to one of three line drawings. Responses are recorded on a separate scoring/analysis form. The test is designed for individual administration by speech and testing specialists. Test results can also be used to diagnose the language competence of bilingual and mentally retarded children as well as those with hearing, articulation, or language disorders.

This standardized test is published by Learning Concepts, Inc., Austin, Texas.

School Readiness

The Readiness Test for Disadvantaged Pre-School Children (Walker) was adapted from the final report of a project conducted by Dr. Wanda Walker,

Northwest Missouri State College, and supported by the Office of Education. The test consists of multiple-choice items based on pictures and symbols which do not require reading ability and are designed to test a child's listening ability; visual ability; and his recognition of similarities, differences, numerical analogies, and missing parts.

This standardized test is available from ERIC Reproduction Service (ED 047 168), Bethesda, Maryland.

Self Concept and Personality Development

The Developmental Profiles (Bessell and Palomares) is a subjective evaluation of children's behavior under a variety of circumstances. These rating scales are prepared periodically jointly by two teachers. The teachers make ratings on a printed form according to six affective areas; awareness of self; self-confidence; interpersonal comprehension; sensitivity to others; effectiveness; and tolerance. Because of the inherently subjective nature of these profiles, there is no objective scale of accomplishment or standard in terms of age-achievement scores. The profiles can provide a source of insight and understanding of emotional and personality development.

This instrument is published by the Human Development Training Institute, El Cajon, California.

Basic Skills/Student Achievement

Kindergarten

The Boehm Test of Basic Concepts (1969 edition) is designed for the kindergarten level and provides a measure of general basic skills. This standardized test is published by the Psychological Corporation, New York, New York.

Grades 1-3

The Metropolitan Achievement Tests (1970 edition) is designed for the primary and elementary levels and measure student schievement in 7 areas: reading comprehension; arithmetic skills; vocabulary; spelling; language skills; language study skills; and social studies information. This evaluation study used only the reading comprehension and arithmetic skills sub-tests for grades 1.5-4.9. The normative data points are mid-October and mid-April. Types of scores which can be obtained include: raw scores; grade-equivalent scores; standardized scores; percentiles; and stanines.

This standardized test is published by Harcourt Brace Jovanovich, Inc. 757 Third Avenue, New York, New York, 10017.